FIG. 1

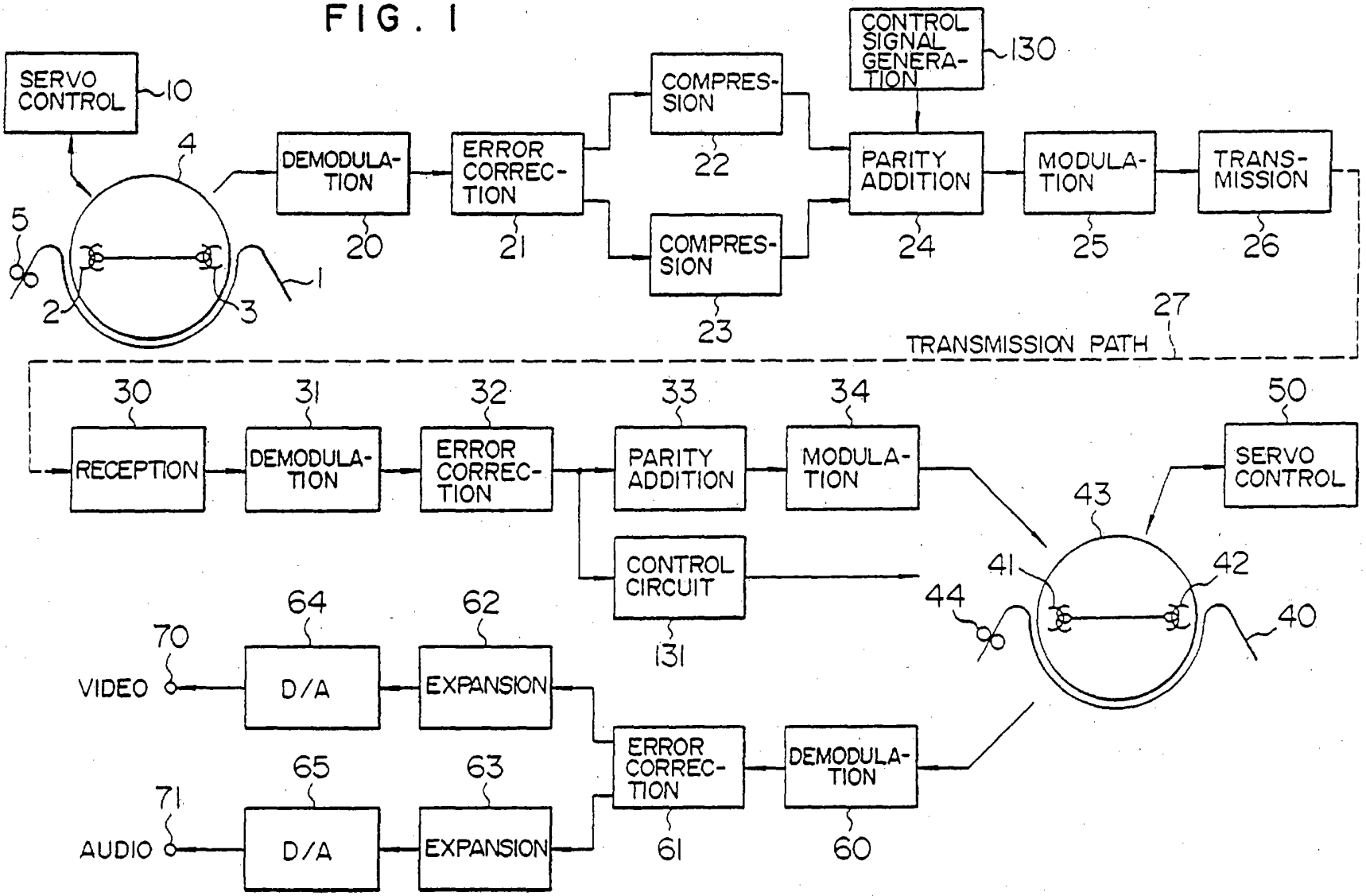

SERVO CONTROL
10
4
5
2
3
1
DEMODULATION
20
ERROR CORRECTION
21
COMPRESSION
22
COMPRESSION
23
CONTROL SIGNAL GENERATION
130
PARITY ADDITION
24
MODULATION
25
TRANSMISSION
26
27
TRANSMISSION PATH
30
RECEPTION
31
DEMODULATION
32
ERROR CORRECTION
33
PARITY ADDITION
34
MODULATION
50
SERVO CONTROL
43
41
42
44
40
CONTROL CIRCUIT
131
64
62
70
VIDEO
D/A
EXPANSION
65
63
71
AUDIO
D/A
EXPANSION
ERROR CORRECTION
61
DEMODULATION
60

FIG. 2

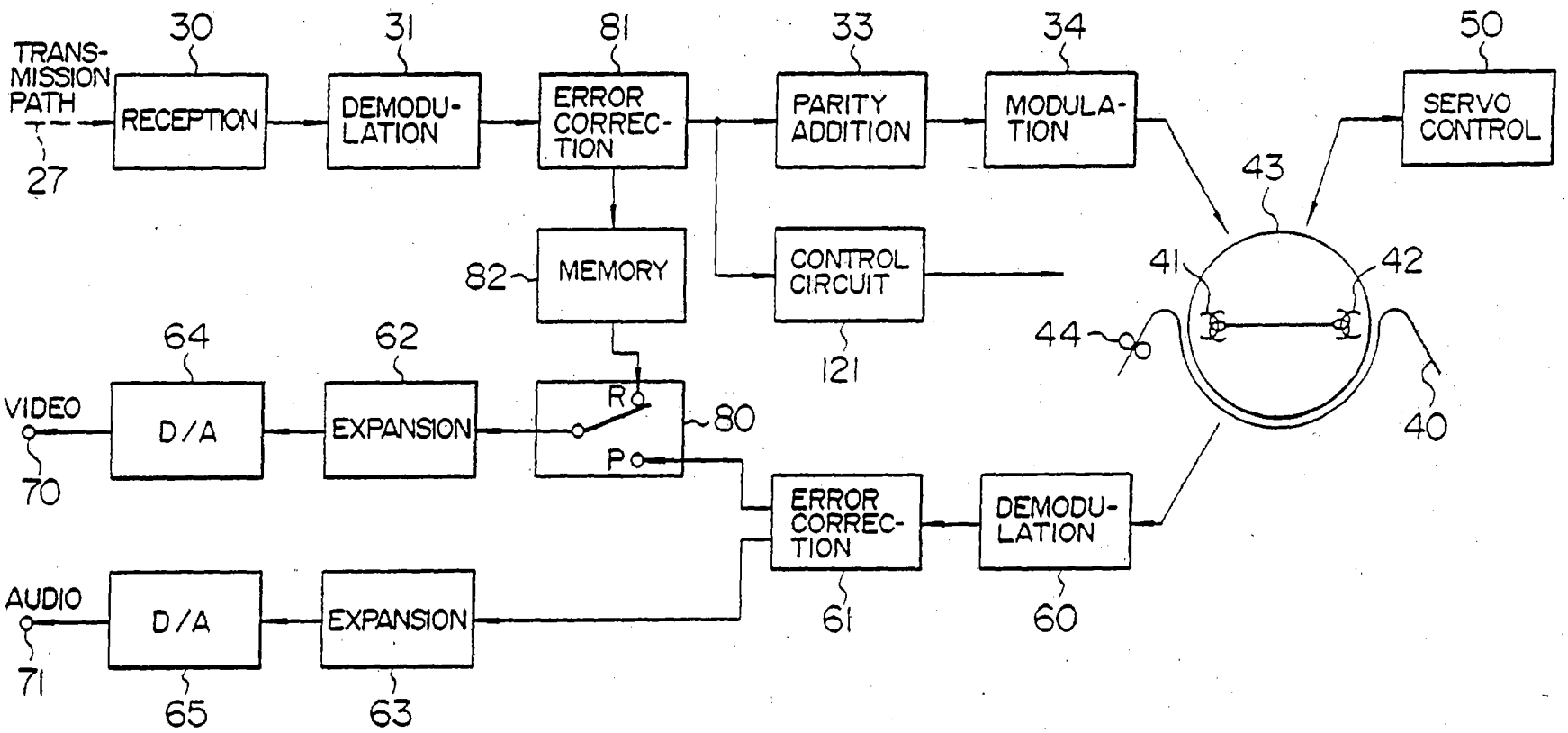

TRANS-
MISSION
PATH
27
30
RECEPTION
31
DEMODU-
LATION
81
ERROR
CORREC-
TION
33
PARITY
ADDITION
34
MODULA-
TION
50
SERVO
CONTROL
43
82
MEMORY
CONTROL
CIRCUIT
121
41
42
44
40
64
62
VIDEO
D/A
EXPANSION
R
P
80
70
ERROR
CORREC-
TION
61
DEMODU-
LATION
60
AUDIO
D/A
EXPANSION
71
65
63

FIG. 3

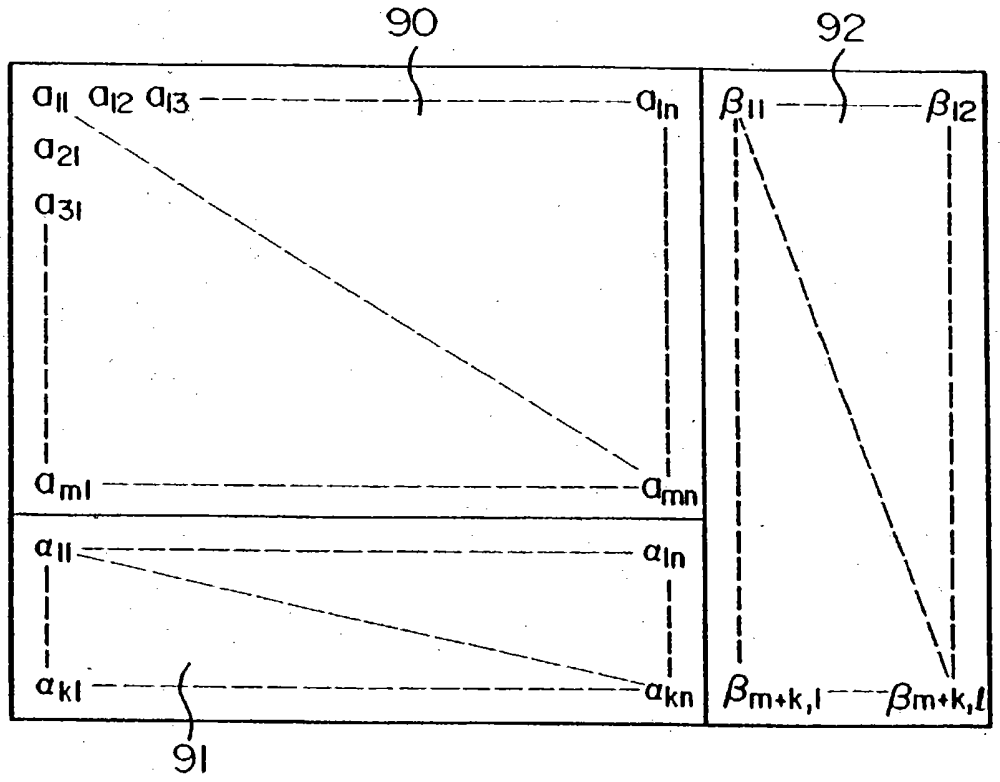

90
92
a_{11} a_{12} a_{13}
a_{1n}
a_{21}
a_{31}
a_{m1}
a_{mn}
β_{11}
β_{12}
α_{11}
α_{1n}
α_{k1}
α_{kn}
$\beta_{m+k,1}$
$\beta_{m+k,l}$
91

FIG. 4

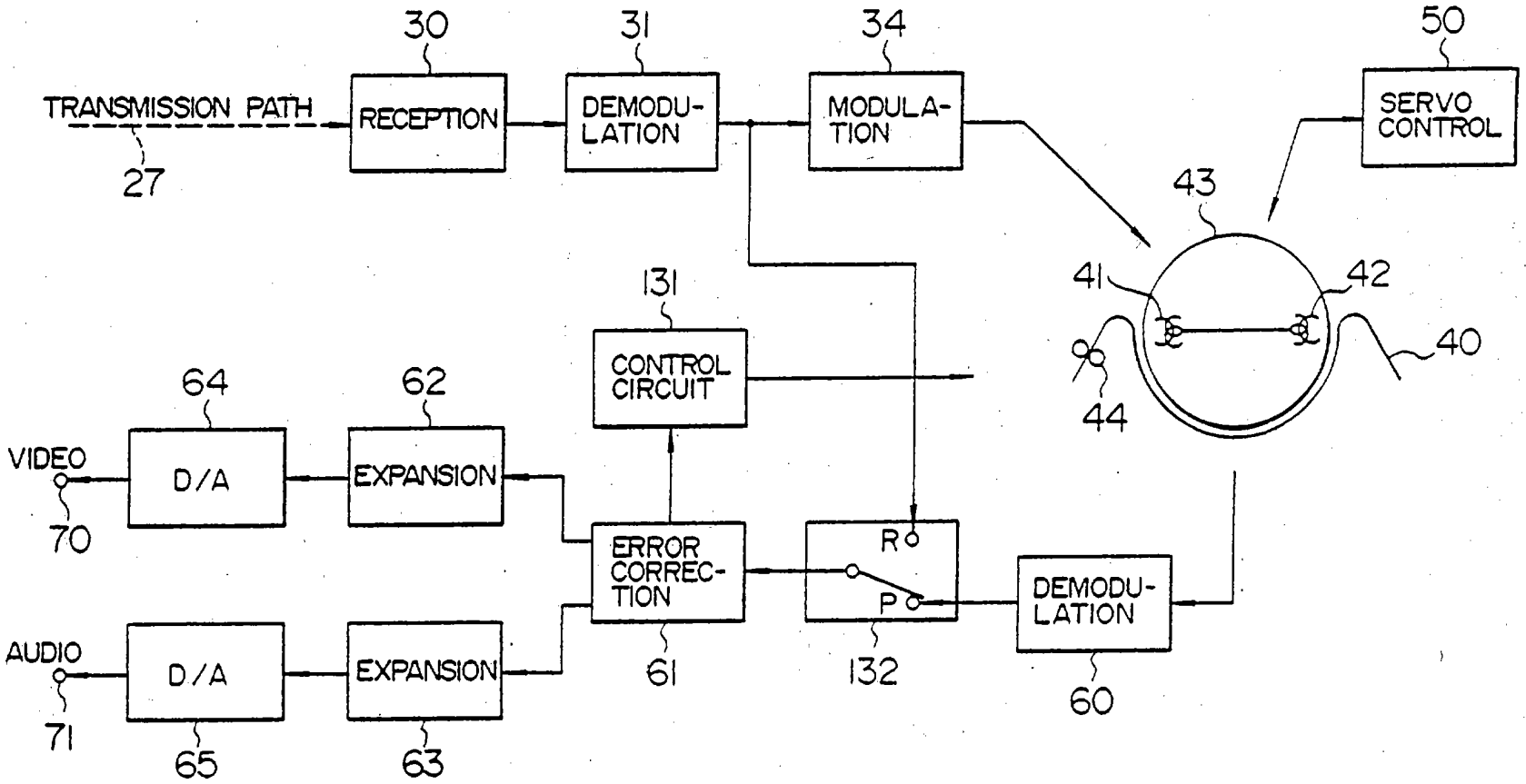

30
31
34
50
TRANSMISSION PATH
RECEPTION
DEMODU-LATION
MODULA-TION
SERVO CONTROL
27
43
41
42
40
131
CONTROL CIRCUIT
44
64
62
VIDEO
D/A
EXPANSION
70
ERROR CORREC-TION
R
P
DEMODU-LATION
AUDIO
D/A
EXPANSION
71
65
63
61
132
60

FIG. 5

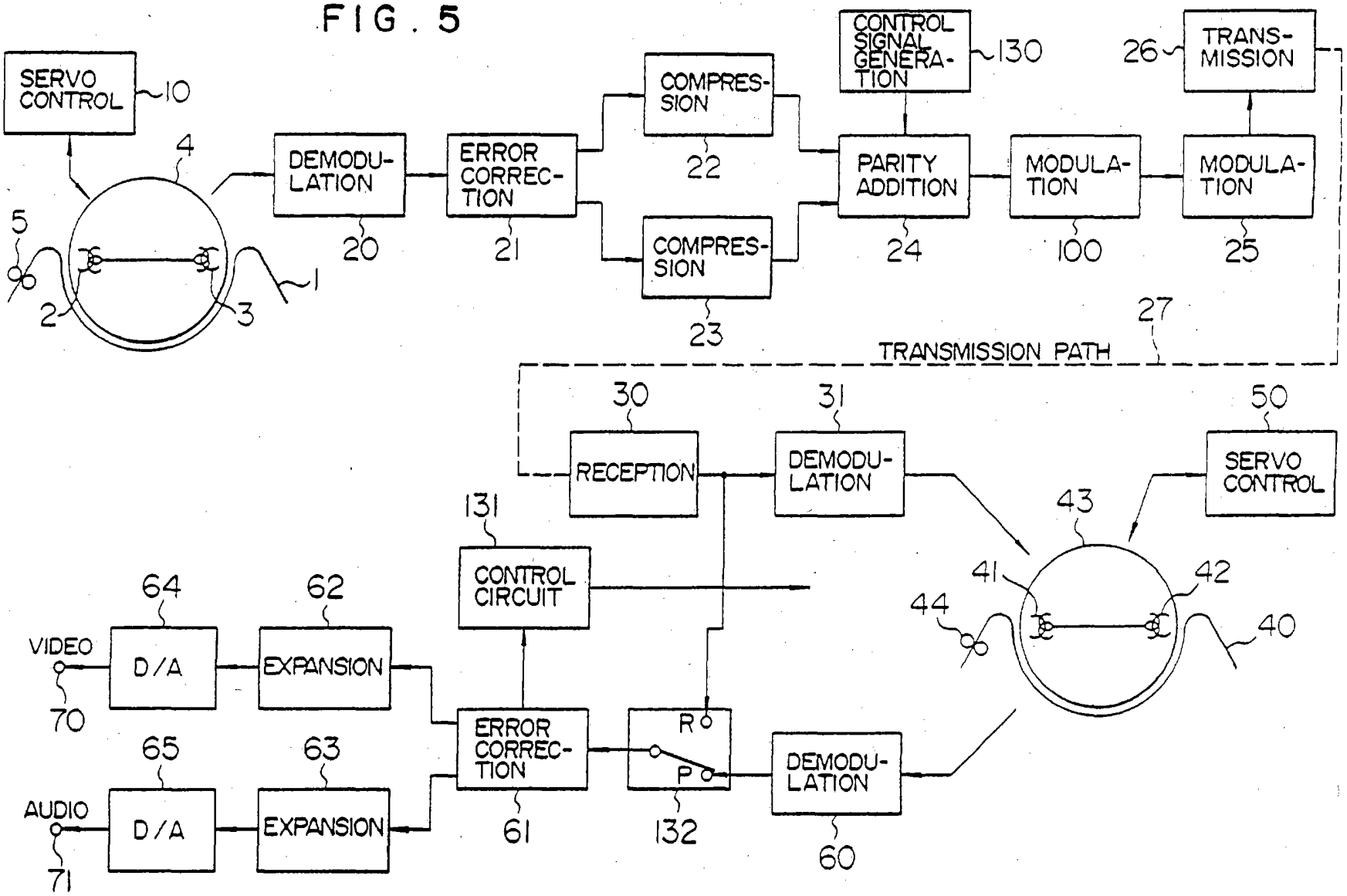

SERVO CONTROL
10
4
5
2
3
1
DEMODU-LATION
20
ERROR CORREC-TION
21
COMPRES-SION
22
COMPRES-SION
23
CONTROL SIGNAL GENERA-TION
130
PARITY ADDITION
24
MODULA-TION
100
MODULA-TION
25
26
TRANS-MISSION
27
TRANSMISSION PATH
30
RECEPTION
31
DEMODU-LATION
50
SERVO CONTROL
43
131
CONTROL CIRCUIT
41
42
44
40
64
62
VIDEO
D/A
EXPANSION
70
65
63
AUDIO
D/A
EXPANSION
71
ERROR CORREC-TION
61
R
P
132
DEMODU-LATION
60

FIG. 6

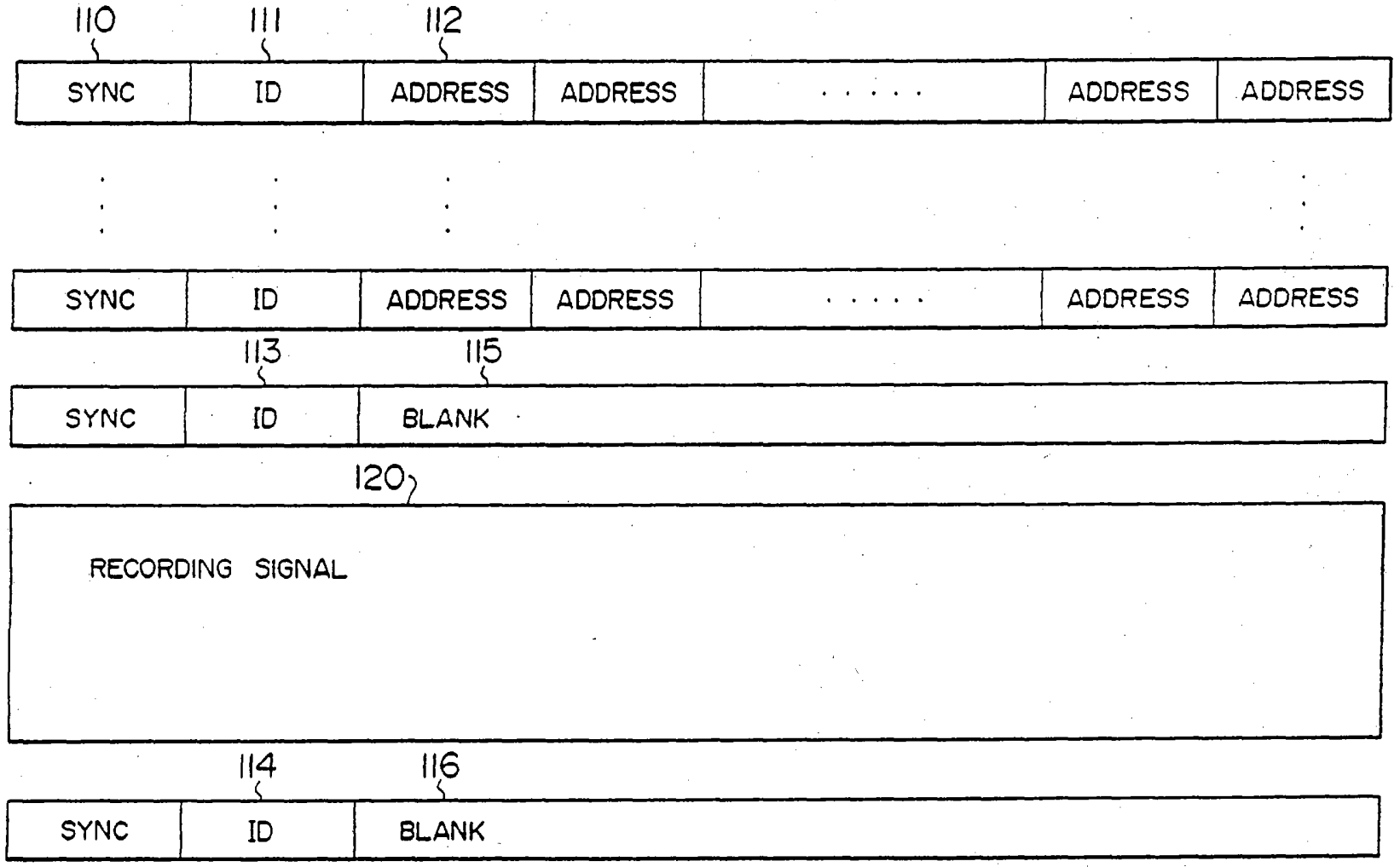

110
111
112
SYNC
ID
ADDRESS
ADDRESS
. . . . .
ADDRESS
ADDRESS
SYNC
ID
ADDRESS
ADDRESS
. . . . .
ADDRESS
ADDRESS
113
115
SYNC
ID
BLANK
120
RECORDING SIGNAL
114
116
SYNC
ID
BLANK

FIG. 7

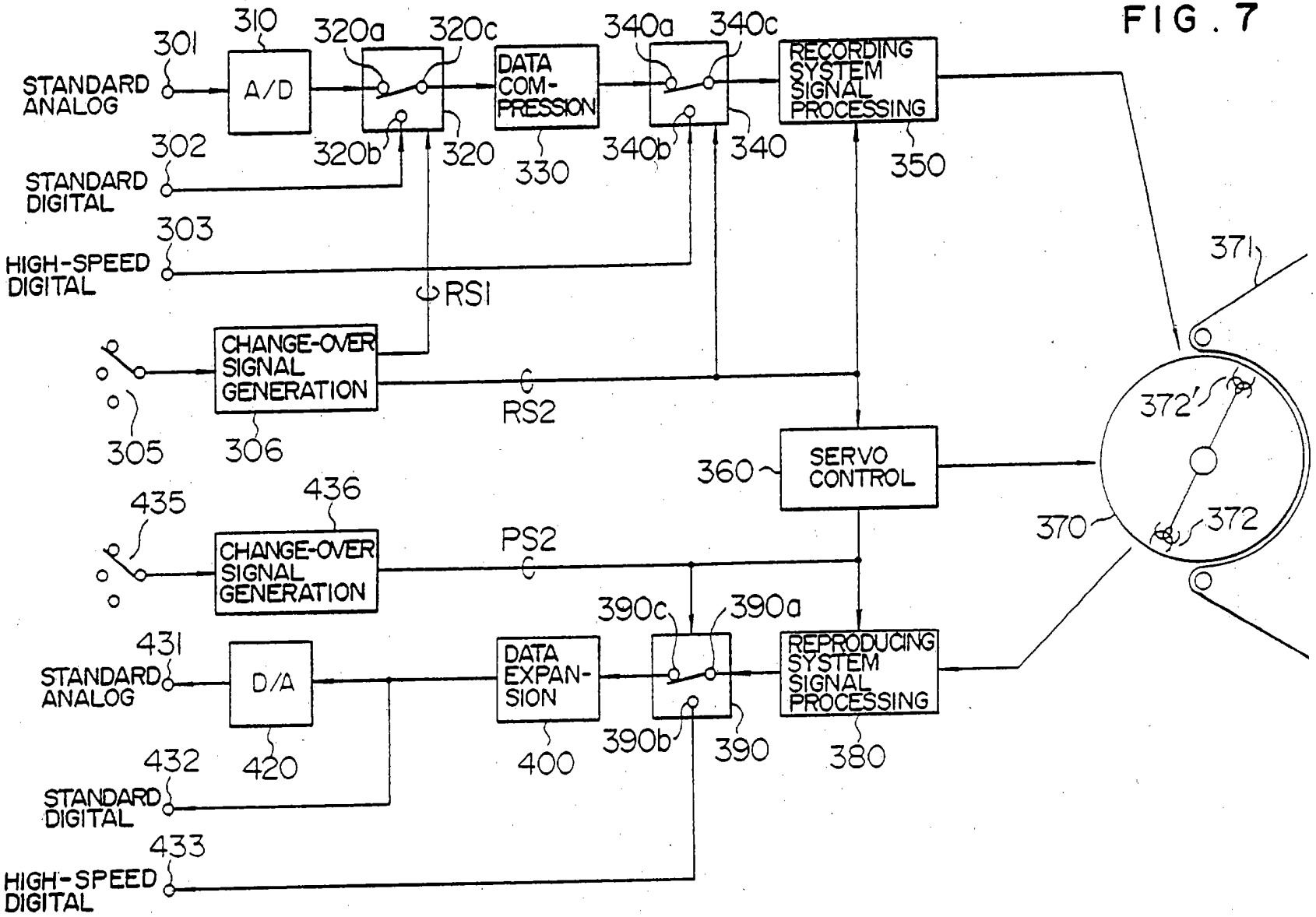

301
STANDARD ANALOG
310
A/D
320a
320c
320b
320
DATA COM-PRESSION
330
340a
340c
340b
340
RECORDING SYSTEM SIGNAL PROCESSING
350
302
STANDARD DIGITAL
303
HIGH-SPEED DIGITAL
RS1
CHANGE-OVER SIGNAL GENERATION
306
RS2
305
360
SERVO CONTROL
371
372'
372
370
435
436
CHANGE-OVER SIGNAL GENERATION
PS2
390c
390a
431
STANDARD ANALOG
D/A
420
DATA EXPAN-SION
400
390b
390
REPRODUCING SYSTEM SIGNAL PROCESSING
380
432
STANDARD DIGITAL
433
HIGH-SPEED DIGITAL

FIG. 8

INPUT \ ITEM		FIELD FREQUENCY	TRANSMISSION RATE	DATA COMPRESSION	TIME-BASE COMPRESSION
STANDARD SPEED	ANALOG	59.94 Hz	(AFTER A/D) 114 Mbps	ABSENCE	ABSENCE
	DIGITAL		114 Mbps		
HIGH SPEED	DIGITAL	59.94 Hz	100 Mbps	PRESENCE 1/11.4	PRESENCE 1/10

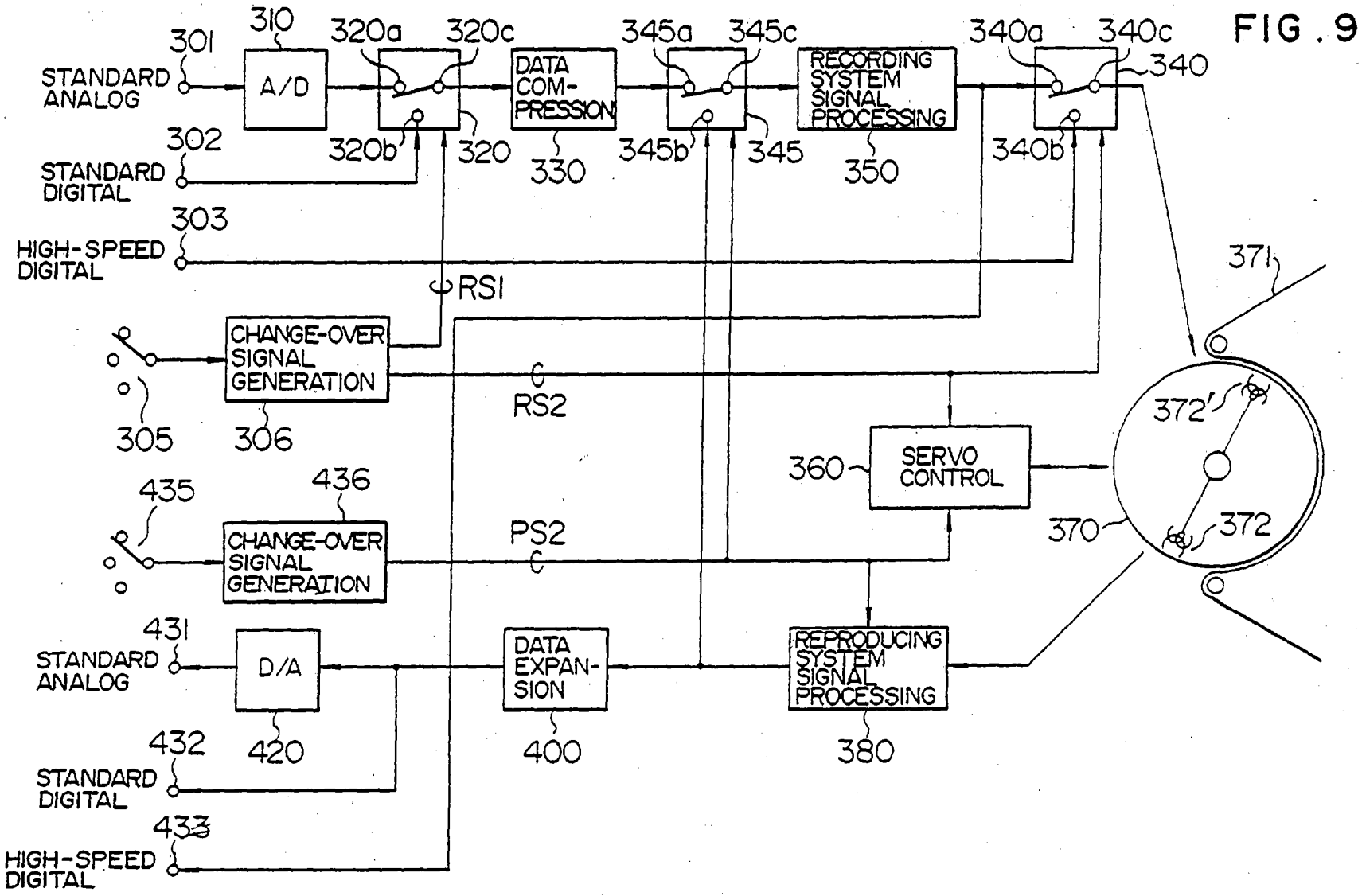

301
310
320a
320c
345a
345c
340a
340c
340
STANDARD ANALOG
A/D
DATA COM-PRESSION
RECORDING SYSTEM SIGNAL PROCESSING
302
320b
320
330
345b
345
350
340b
STANDARD DIGITAL
303
HIGH-SPEED DIGITAL
RS1
371
CHANGE-OVER SIGNAL GENERATION
RS2
305
306
372'
360
SERVO CONTROL
435
436
CHANGE-OVER SIGNAL GENERATION
PS2
370
372
431
STANDARD ANALOG
D/A
DATA EXPAN-SION
REPRODUCING SYSTEM SIGNAL PROCESSING
432
420
400
380
STANDARD DIGITAL
433
HIGH-SPEED DIGITAL

FIG. 9

FIG. 10

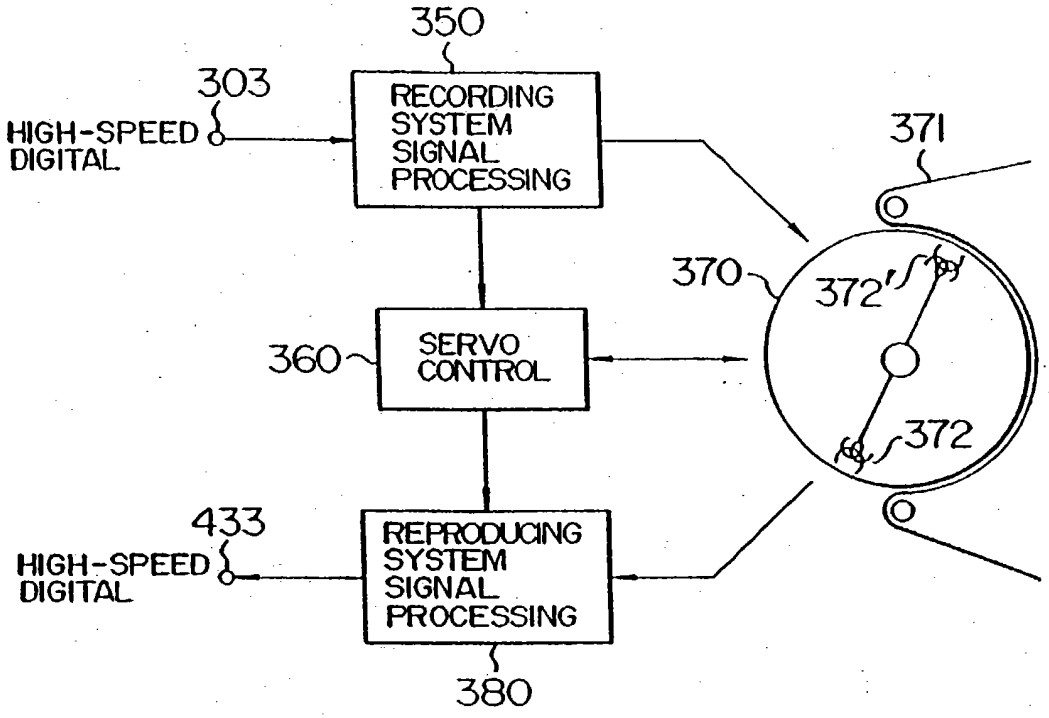

350
303
HIGH-SPEED DIGITAL
RECORDING SYSTEM SIGNAL PROCESSING
371
370
372'
372
360
SERVO CONTROL
433
HIGH-SPEED DIGITAL
REPRODUCING SYSTEM SIGNAL PROCESSING
380

FIG. 11

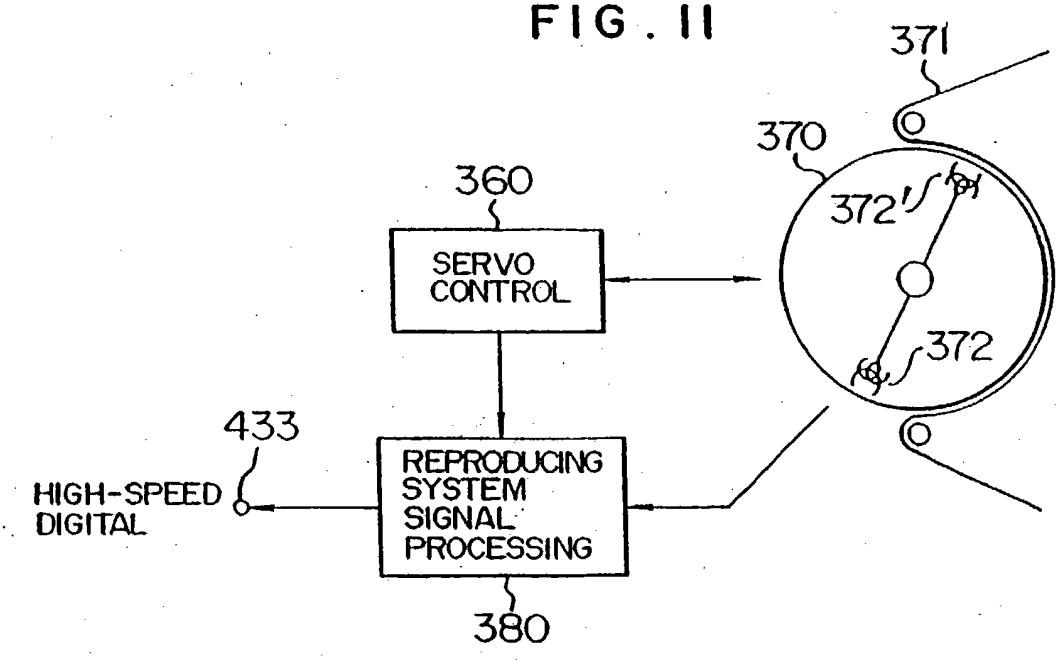

371
370
372'
372
360
SERVO CONTROL
433
HIGH-SPEED DIGITAL
REPRODUCING SYSTEM SIGNAL PROCESSING
380

FIG. 12

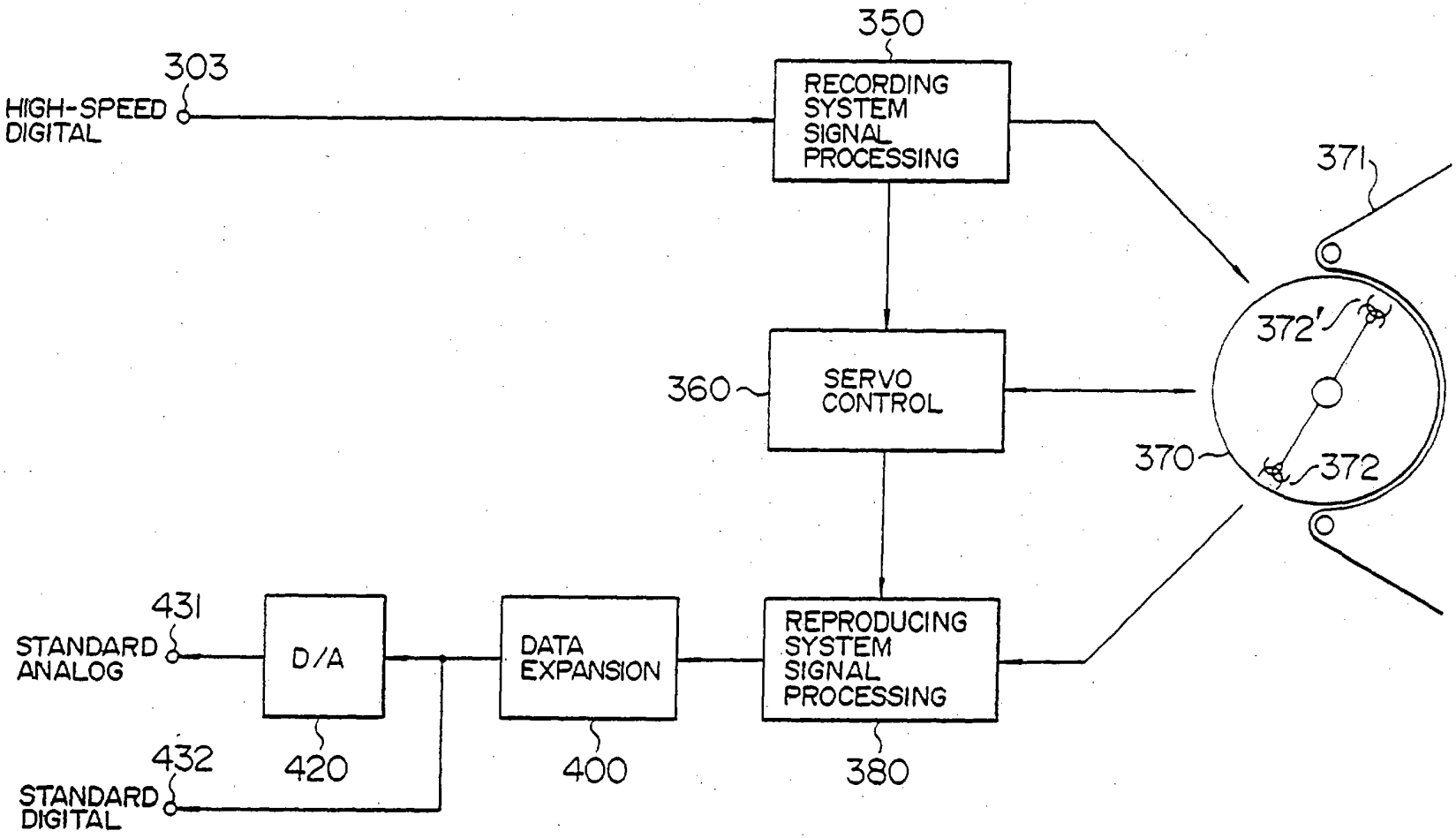

350
303
HIGH-SPEED DIGITAL
RECORDING SYSTEM SIGNAL PROCESSING
371
372'
360
SERVO CONTROL
370
372
431
STANDARD ANALOG
D/A
DATA EXPANSION
REPRODUCING SYSTEM SIGNAL PROCESSING
432
STANDARD DIGITAL
420
400
380

FIG. 13

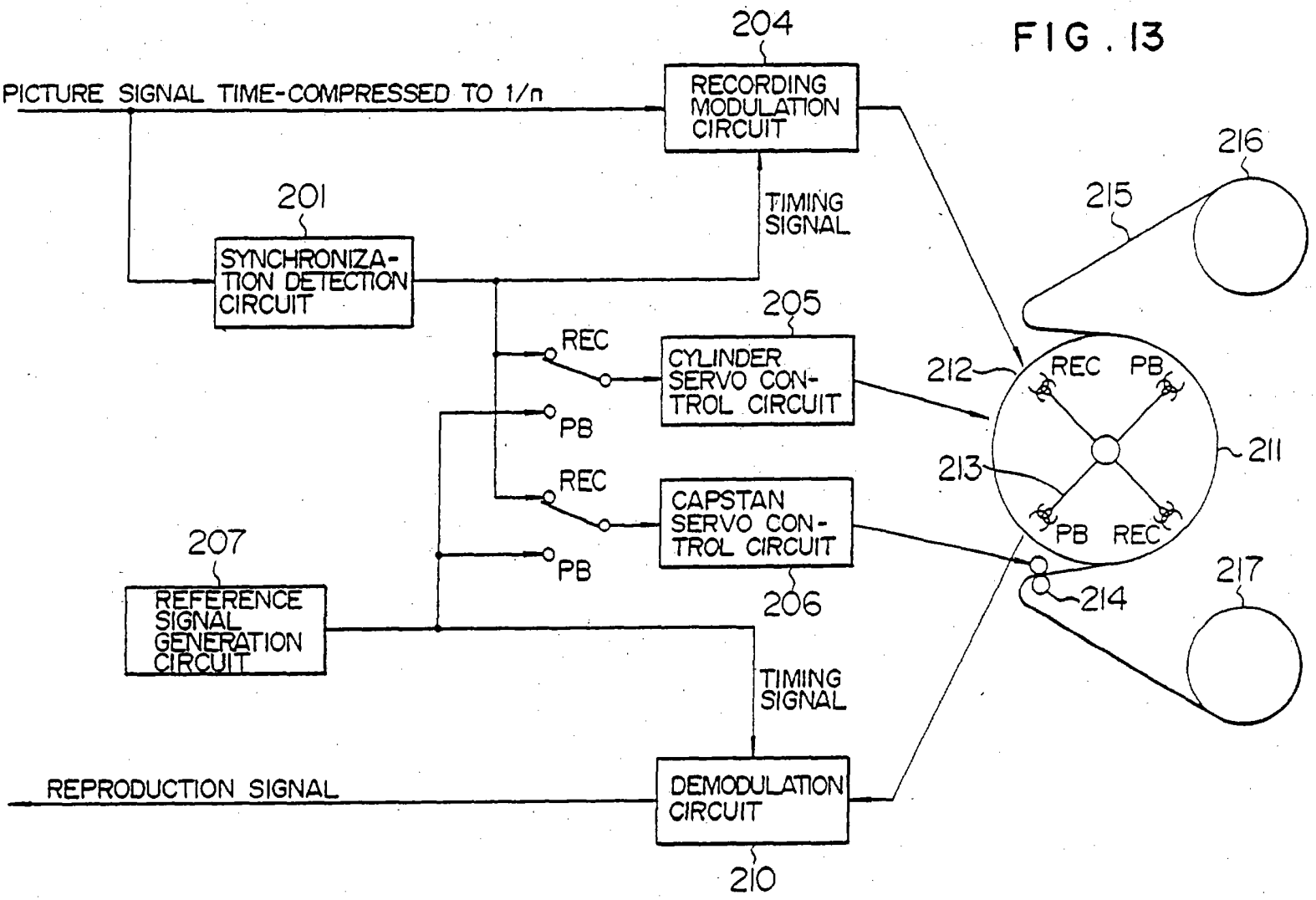

204
PICTURE SIGNAL TIME-COMPRESSED TO 1/n
RECORDING MODULATION CIRCUIT
216
215
201
TIMING SIGNAL
SYNCHRONIZATION DETECTION CIRCUIT
205
REC
CYLINDER SERVO CONTROL CIRCUIT
212
REC PB
PB
211
213
REC
CAPSTAN SERVO CONTROL CIRCUIT
PB REC
207
PB
217
214
206
REFERENCE SIGNAL GENERATION CIRCUIT
TIMING SIGNAL
REPRODUCTION SIGNAL
DEMODULATION CIRCUIT
210

FIG. 14

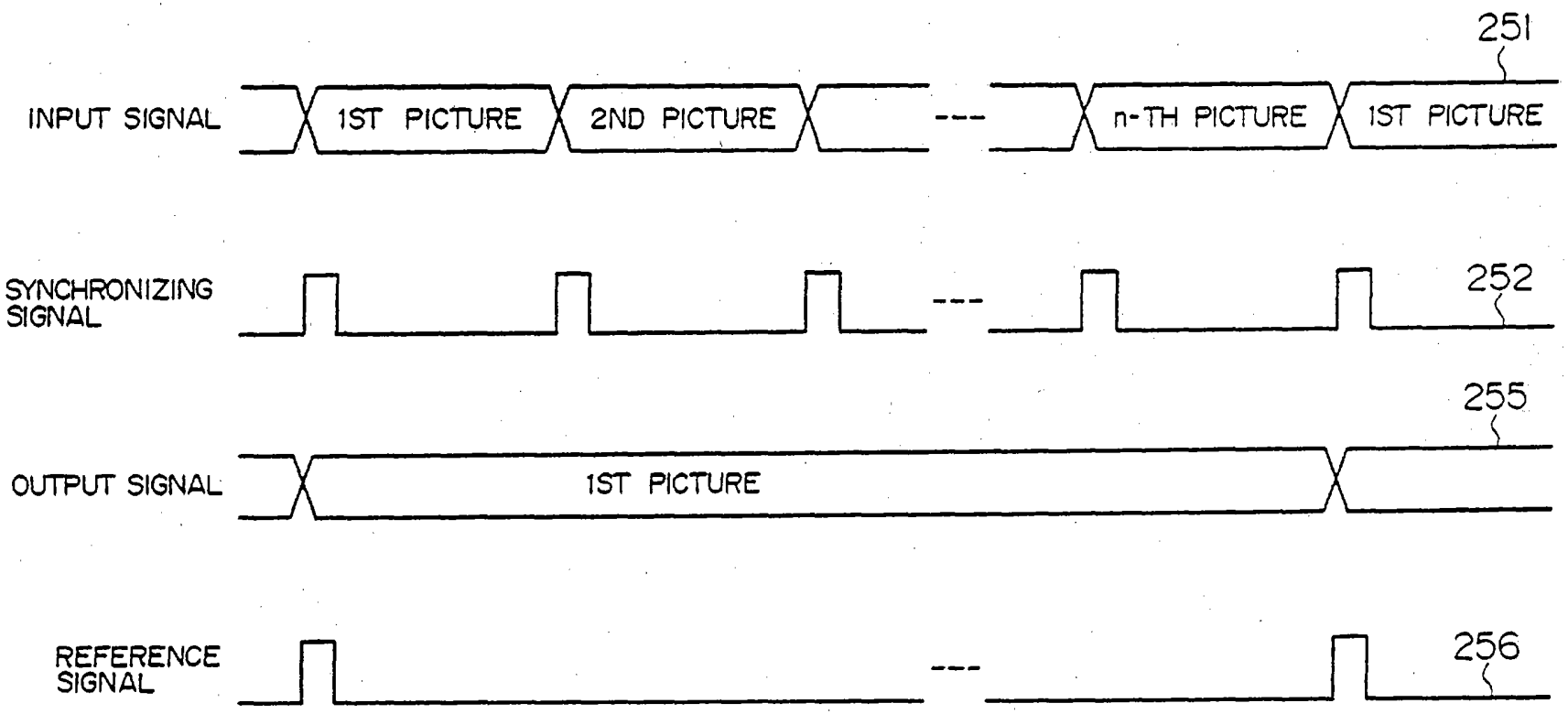

251
INPUT SIGNAL
1ST PICTURE
2ND PICTURE
---
n-TH PICTURE
1ST PICTURE
SYNCHRONIZING SIGNAL
252
255
OUTPUT SIGNAL
1ST PICTURE
REFERENCE SIGNAL
256

FIG. 15

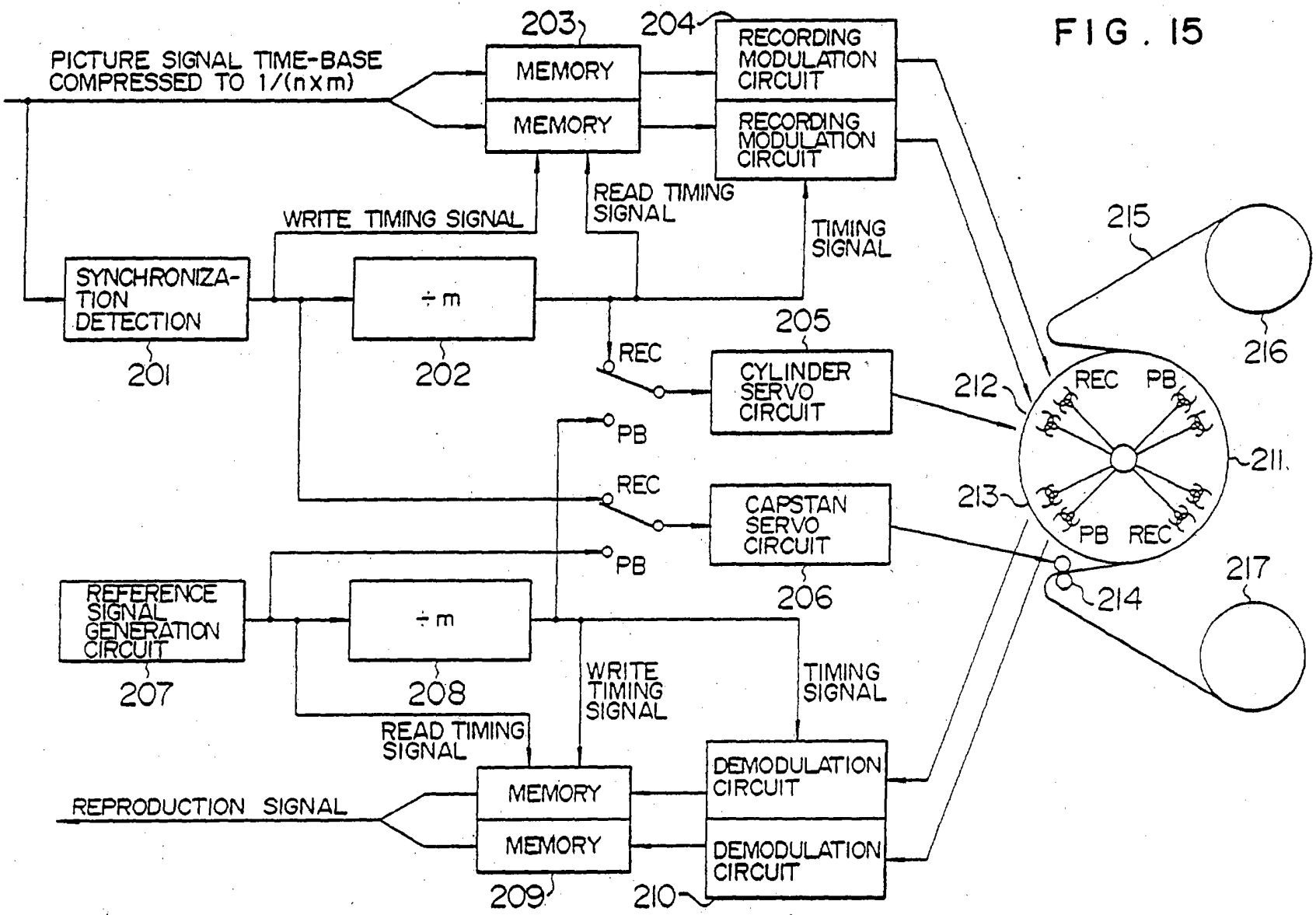
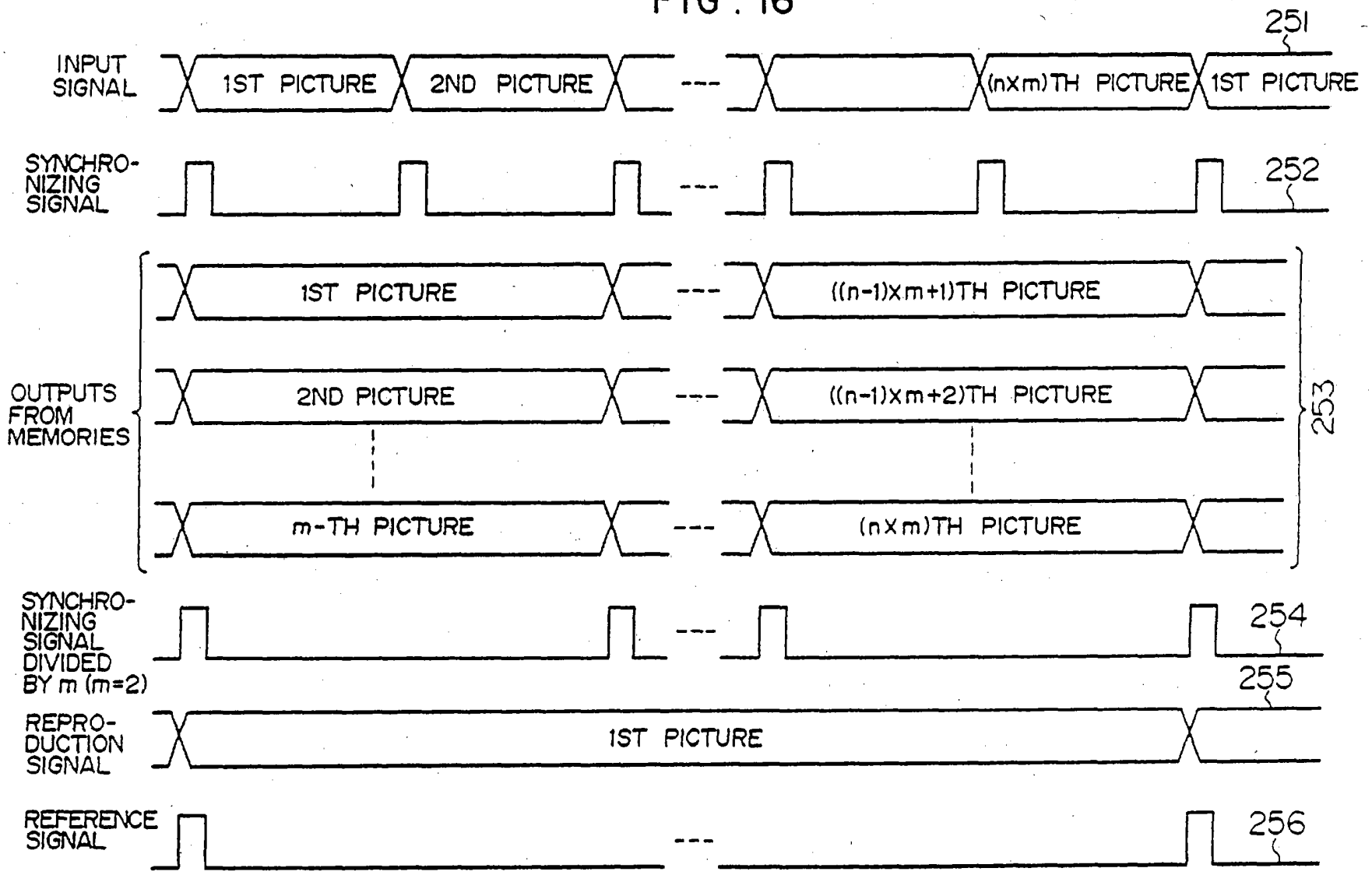

PICTURE SIGNAL TIME-BASE COMPRESSED TO 1/(n×m)
203
204
MEMORY
MEMORY
RECORDING MODULATION CIRCUIT
RECORDING MODULATION CIRCUIT
WRITE TIMING SIGNAL
READ TIMING SIGNAL
TIMING SIGNAL
SYNCHRONIZATION DETECTION
÷ m
201
202
205
REC
CYLINDER SERVO CIRCUIT
PB
REC
CAPSTAN SERVO CIRCUIT
PB
206
REFERENCE SIGNAL GENERATION CIRCUIT
÷ m
207
208
WRITE TIMING SIGNAL
TIMING SIGNAL
READ TIMING SIGNAL
REPRODUCTION SIGNAL
MEMORY
MEMORY
DEMODULATION CIRCUIT
DEMODULATION CIRCUIT
209
210
215
216
212
REC
PB
211
213
PB
REC
214
217

FIG. 16


251
INPUT SIGNAL
1ST PICTURE
2ND PICTURE

(nXm)TH PICTURE
1ST PICTURE
SYNCHRO-NIZING SIGNAL
252
OUTPUTS FROM MEMORIES
1ST PICTURE
((n-1)Xm+1)TH PICTURE
2ND PICTURE
((n-1)Xm+2)TH PICTURE
m-TH PICTURE
(nXm)TH PICTURE
253
SYNCHRO-NIZING SIGNAL DIVIDED BY m (m=2)
254
255
REPRO-DUCTION SIGNAL
1ST PICTURE
REFERENCE SIGNAL
256

FIG. 17

SYSTEM	MODE		TAPE SPEED (RATIO TO STANDARD SPEED)		CYLINDER ROTATION SPEED (rpm)		NUMBER OF HEAD PAIRS		CYLINDER DIAMETER (mmφ)	CYLINDER CONTACT ANGLE (deg)	NUMBER OF TRACKS REQUIRED FOR ONE PICTURE	REMARKS
	REC	PB	REC	PB	REC	PB	REC	PB				
VHS (NTSC)	NORMAL SPEED	NORMAL SPEED	1	1	1800	1800	1	1	62	180	1	
D2 (NTSC)	NORMAL SPEED	NORMAL SPEED	1	1	5400	5400	2	2	96	180	6	
EXAMPLE ①	HIGH SPEED	NORMAL SPEED	10	1	9000	900	1	1	120	180	1/2	
	HIGH SPEED	HIGH SPEED	10	10	9000	9000						
	NORMAL SPEED	HIGH SPEED	1	10	900	9000						
EXAMPLE ②	HIGH SPEED	NORMAL SPEED	10	1	9000	900	1	1	90	270	1/2	
	HIGH SPEED	HIGH SPEED	10	10	9000	9000						
	NORMAL SPEED	HIGH SPEED	1	10	900	9000						
EXAMPLE ③	HIGH SPEED	NORMAL SPEED	10	1	18000	1800	1	1	60	180	1	
	HIGH SPEED	HIGH SPEED	10	10	18000	18000						
	NORMAL SPEED	HIGH SPEED	1	10	1800	18000						
EXAMPLE ④	HIGH SPEED	NORMAL SPEED	10	1	9000	900	2	2	60	180	1	
	HIGH SPEED	NORMAL SPEED	10	10	9000	9000						
	NORMAL SPEED	HIGH SPEED	1	10	900	9000						
EXAMPLE ⑤	HIGH SPEED	NORMAL SPEED	10	1	9000	1800	2	1	60	180	1	MOVABLE HEADS ARE REQUIRED
	HIGH SPEED	HIGH SPEED	10	10	9000	9000	2	2				
	NORMAL SPEED	HIGH SPEED	1	10	1800	9000	1	2				

FIG. 18

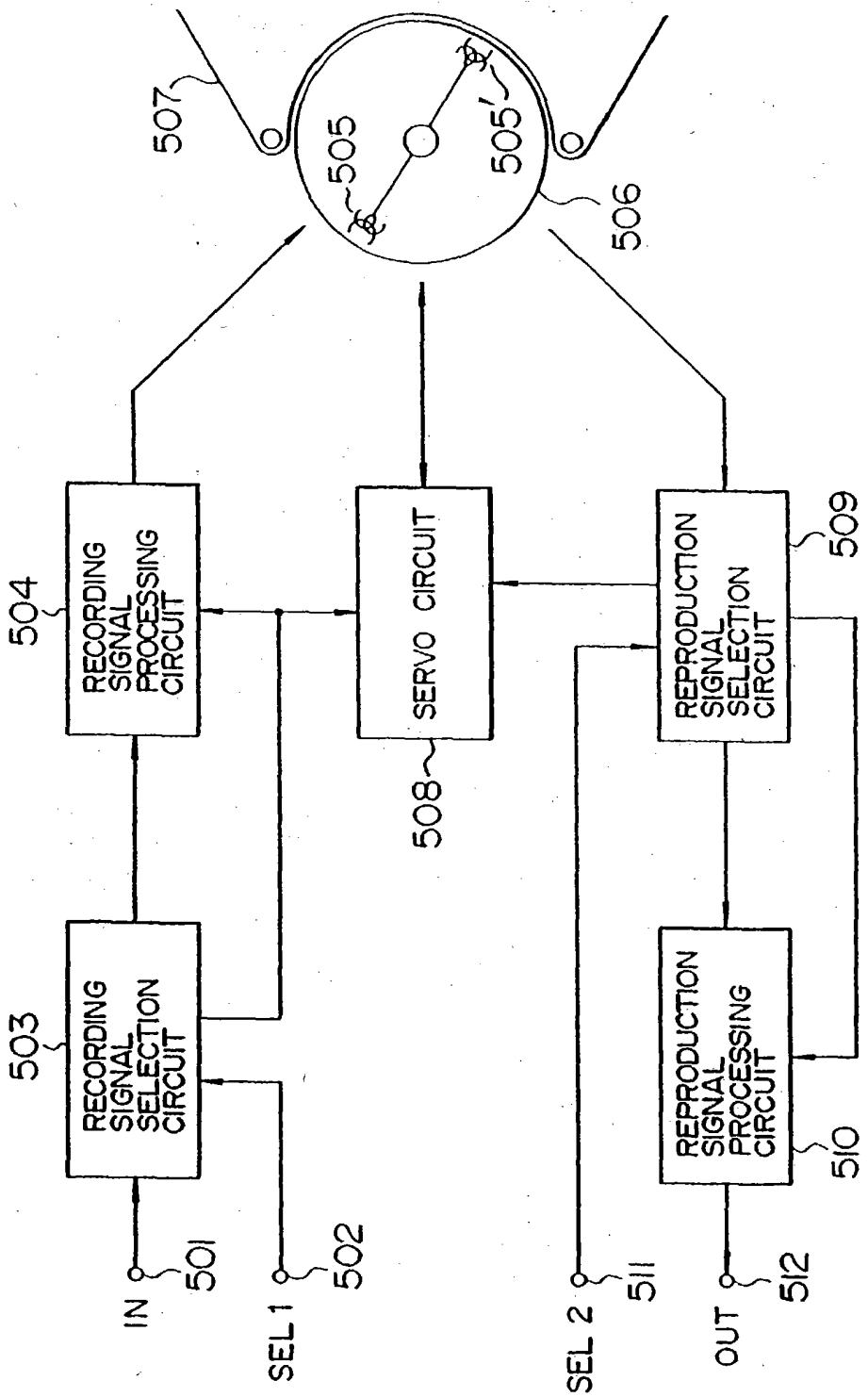

507
505
505'
506
504
RECORDING SIGNAL PROCESSING CIRCUIT
SERVO CIRCUIT
508
REPRODUCTION SIGNAL SELECTION CIRCUIT
509
503
RECORDING SIGNAL SELECTION CIRCUIT
REPRODUCTION SIGNAL PROCESSING CIRCUIT
510
IN
501
SEL 1
502
SEL 2
511
OUT
512

FIG. 19

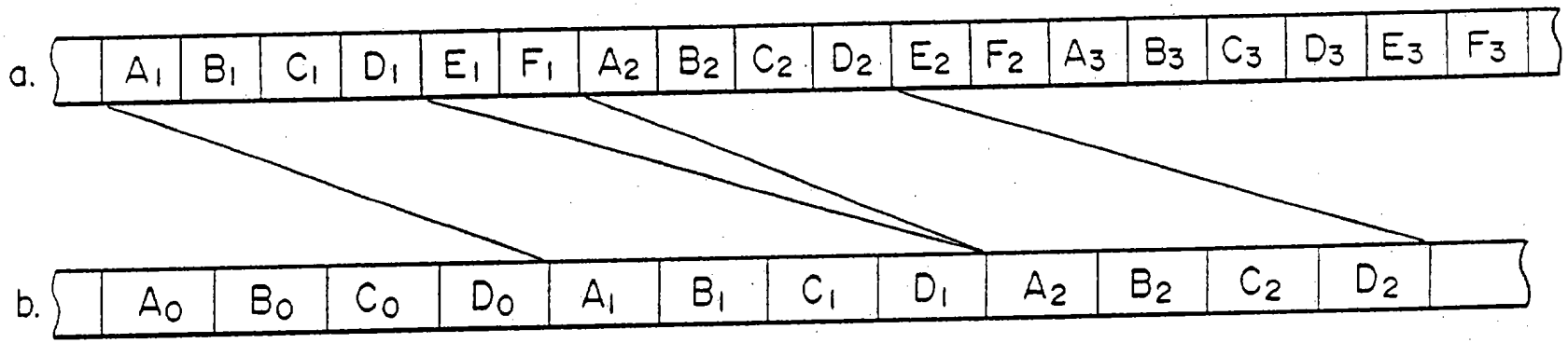
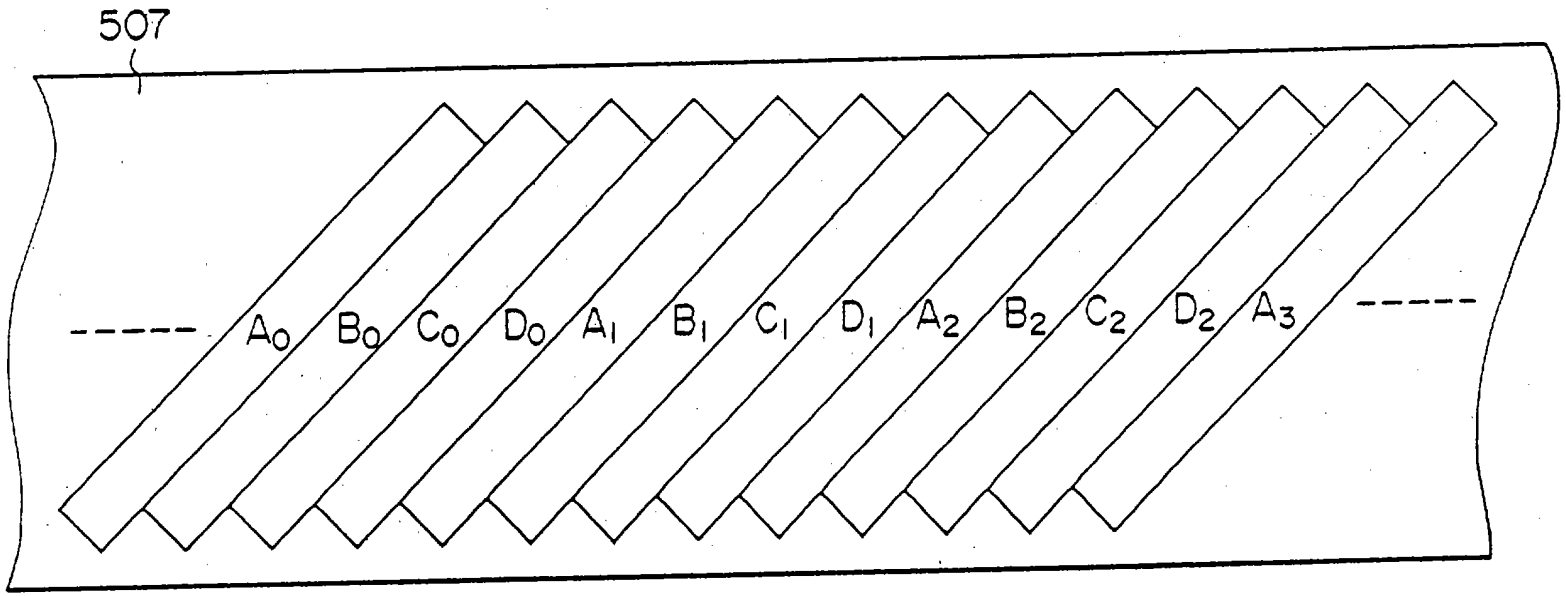

a.
A1 B1 C1 D1 E1 F1 A2 B2 C2 D2 E2 F2 A3 B3 C3 D3 E3 F3
b.
A0 B0 C0 D0 A1 B1 C1 D1 A2 B2 C2 D2

FIG. 20


507
A0 B0 C0 D0 A1 B1 C1 D1 A2 B2 C2 D2 A3